EnSafe®
Environmental and Safety Designs, Inc.
P. O. BOX 341315, MEMPHIS, TN 38184-1315
(901) 372-7962
Fax (901) 372-2454

DATE: 7/21/93

TO

Name: Beth Brown

Company: EPA

FROM

Name: C Wise

Total number of pages (including cover sheet): 4

COMMENTS

Unofficial stuff on CVL. Call if you need interpretation. By my thinking, a supplemental well, if not necessary because we lack containment, gets analyzed the same way as level of SVE expenditure.

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JOB CML
SHEET NO. 1 TO 2
CALCULATED BY CW DATE 6/23/93
CHECKED BY _____ DATE _____
SCALE _____

INPUTS TO COST/BENEFIT MODEL

A. GROUNDWATER - MEM. SAND - PRESUME CONTAINMENT OK *

PUMPING COSTS - WELLS THEMSELVES ARE NOT INCLUDED, AS CITY WOULD USE WP#2 ANYWAY
- AIR STRIPPERS - 2 PUMPS ON SUMPS
- BLOWERS ON AIR STRIPPERS

O&M - AIR STRIPPER SYSTEM MAINT.

MONITORING - QTLY @
- WELL HEADS (2)
- STRIPPER OUT
- AERATOR
- DUPL.
- MW(?)

} VOAs Pb, En

} PW of ANAL

* IF NOT CONTAINED, ADD ADDITIONAL PUMPING, TREATING, MONITOR (CITY WOULD PROBABLY NOT ADD CAPACITY @ WP #2, DUE TO TREATMENT COST)

B. SVE - GO AS FAR AS NEEDED W/ PILOT TESTING TO ESTABLISH DESIGN / CAPITAL & O&M ESTIMATES

⇒ NEED MODELING (AND TREATABILITY TESTING?) TO PREDICT OPERATING TIME (ACTUALLY REMOVAL CURVE)

PW of CAPITAL (INSTALLED)
- WELLS
- INTER-PIPE
- BLOWERS
- APC
- SITE PREP
- CONTROLS

} Establish a Cost V. System-size CURVE? (Both CAP & O/M)

COMPLICATIONS: BLDGS / OPERATING PLANT

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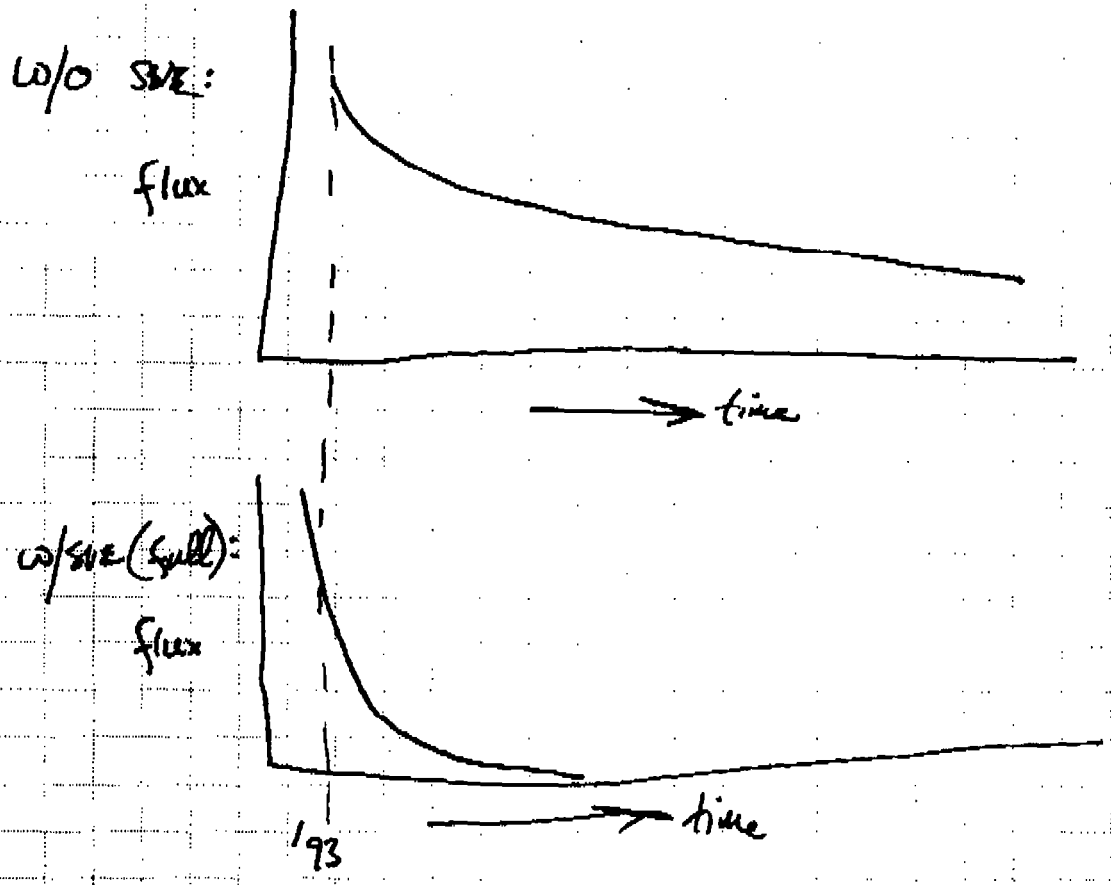
JOB CVL
SHEET NO. 2 TO 2
CALCULATED BY CW DATE 6/23/93
CHECKED BY _____ DATE _____
SCALE _____

C. INCREMENTAL TIME FOR MEMPHIS SAND RESOLUTION
RATE & TRANSPORT OF TCE/Daughters



MULTIMED APPLICABLE?
NEED INITIAL MASS/DISTRIBUTION OF TCE IN SOILS
HAVE IT?

OTHER FACTORS
- will Carrier want to eliminate hazards of leaving mfg space on top of heavily contam soils?
- NCP prefavance for treatment (Harold Taylor)

901-372-2454

TO: CRAIG WISE
FROM: D. GOODMAN
RE: CARRIER COST-BENEFIT ANALYSIS 7/9/93

Your "unstructured thoughts" look pretty well-structured. I think all the issues are represented on your 2 pages.

The basic objective is to understand all the costs of each level of deployment of remediation technology in relation to what that level of deployment accomplishes in the remediation.

The menu of costs include capital and installation for getting the hardware in place (sinking wells, installing strippers, blowers, etc) and the per unit time costs of running them (power, maintenance, monitoring, etc). The menu of items that the various remediation activities accomplish include some absolutes (regulatory requirements, the possible desire of Carrier to achieve some particular soil concentration relative to some possible future site use, etc) and some purely quantitative and incremental benefits that are amenable to trade-offs (such as trading off the removal of TCE at one point versus another, in its path from the contaminated soil to the city supply wells).

I expect that you already have a good handle on how to develop the itemized list of costs. You are also already on track with respect to those elements of the benefit calculation expressed in terms of pounds of TCE removed, or rate of TCE removal, at the point of application of the remediation technology for each hardware scenario.

The loose ends at present probably are: (1) the modeling issues to relate upstream removal of TCE (from soil, upper aquifer, or interdiction well) to the reduction in time for completions of the required remediation at the city wells, and (2) some of the OR aspects of the actual optimization calculations to quantify the trade-offs. MSU will be happy to help with those 2 matters, pending QAMS approval, so that they do not become a significant expense for Carrier or for Ensafe. We have already begun our in-house discussions on how to address the modeling.

Some of the benefits calculations, notably SVE effectiveness, can be made much more certain on the basis of the treatability tests that are being planned now. Accordingly, our work on this cost-benefit analysis should be step-wise, to mesh with the schedule of information availability.

end of file